Province of the
EASTERN CAPE
EDUCATION

GEOGRAPHY

GRADE 11

MARCH 2025

CONTROLLED TEST (SBA)

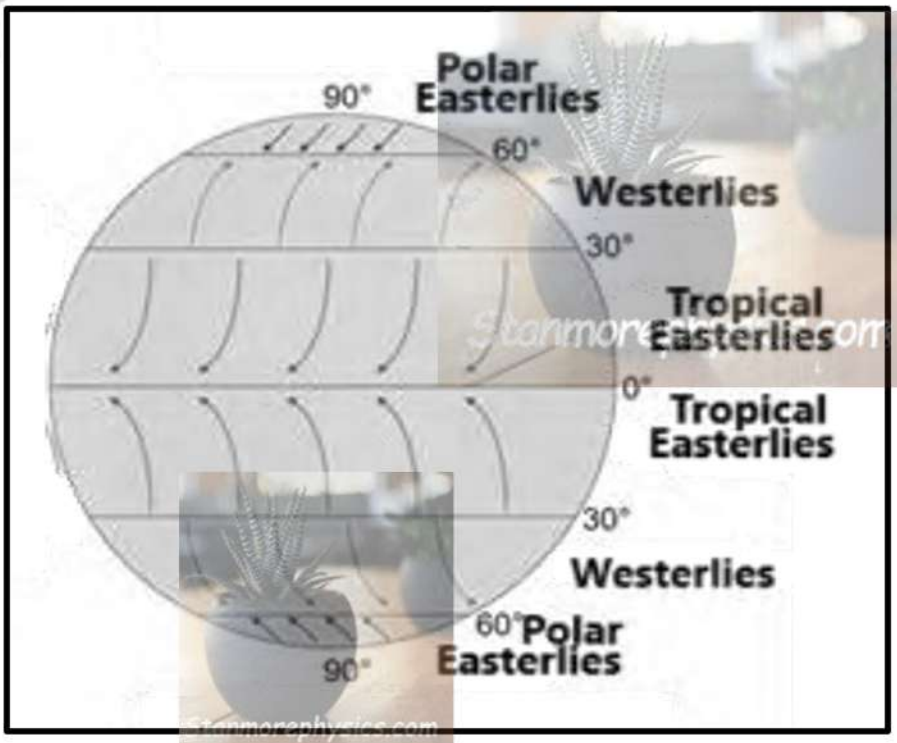
CLIMATOLOGY

MARKS : 60

TIME : 1 HOUR

This question paper consists of 7 pages.

1.1 Refer to the sketch on winds. Choose the correct word(s) from those given in brackets to complete the following sentences. Write only the word(s) next to the question numbers (1.1.1 to 1.1.7) in the ANSWER BOOK.



1.1.1 The (easterlies / westerlies) are responsible for steering the west-wind drift ocean current.

1.1.2 The tropical easterlies blow from the subtropical regions towards the (equator / poles).

1.1.3 The (tropical easterlies / westerlies) are the surface winds of the Hadley cell.

1.1.4 The winds from the Ferrel cell and Polar cell converge to form the (Intertropical Convergence Zone / Polar front).

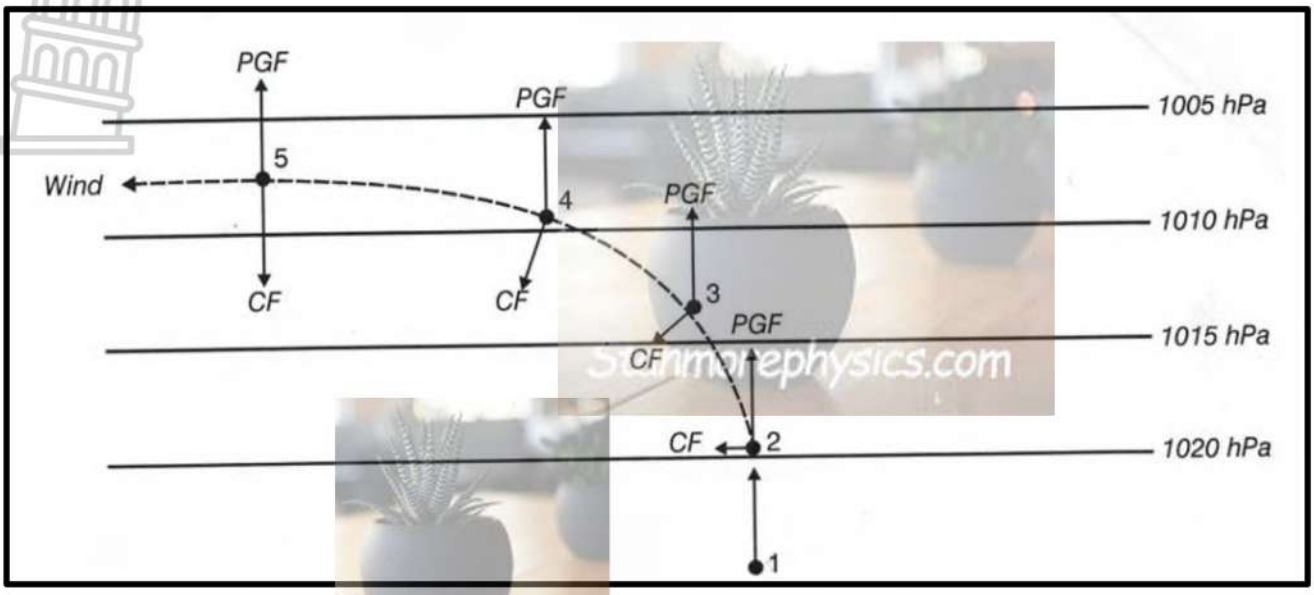
1.1.5 The south-east trade winds are in the (southern / northern) hemisphere.

1.1.6 The (westerlies / easterlies) brings warmer temperatures.

1.1.7 (Planetary / Monsoon) are major winds which blow all year round over large areas of the earth surface. (7x1) (7)

1.2 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (1.2.1 to 1.2.8) in the ANSWER BOOK, for example 1.2.9 D.

Refer to the sketch and answer question 1.2.1 -1.2.5



1.2.1 The lines indicating atmospheric pressure in the sketch is known as …

A. isobars.
B. isotherms.
C. isohyets.
D. isolines.

1.2.2 Coriolis force is responsible for the … of all winds.

A. strength
B. deflection
C. movement
D. balance

1.2.3 The wind labelled **1** is a … wind.

A. northerly
B. southerly
C. south Easterly
D. north Easterly

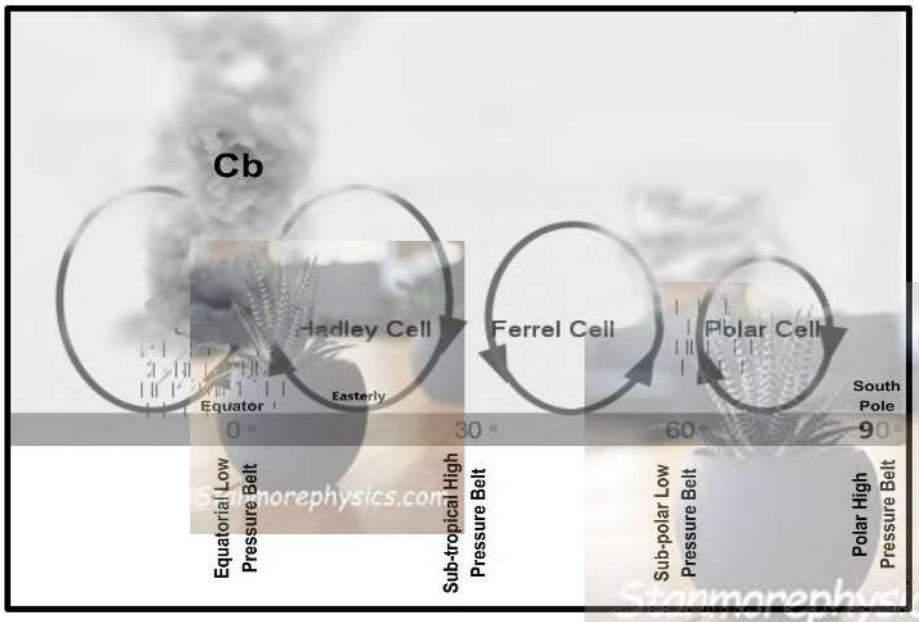
1.2.4. Pressure gradient force is responsible for …

A. deflection of winds from their north-south direction.
B. seasons on earth.
C. movement of air from a high pressure to a low pressure.
D. movement of ocean currents.

1.2.5 The condition of the atmosphere where there is a balance between Coriolis force and the Pressure gradient force is called …

A. geostrophic balance.
B. geostrophic flow.
C. planetary winds.
D. geostrophic friction.

Refer to the sketch and answer question 1.2.6 -1.2.8



1.2.6 The polar front forms at … line of latitude.

A. 30^0 North and South
B. 60^0 North and South
C. 90^0 North and South
D. 15^0 North and South

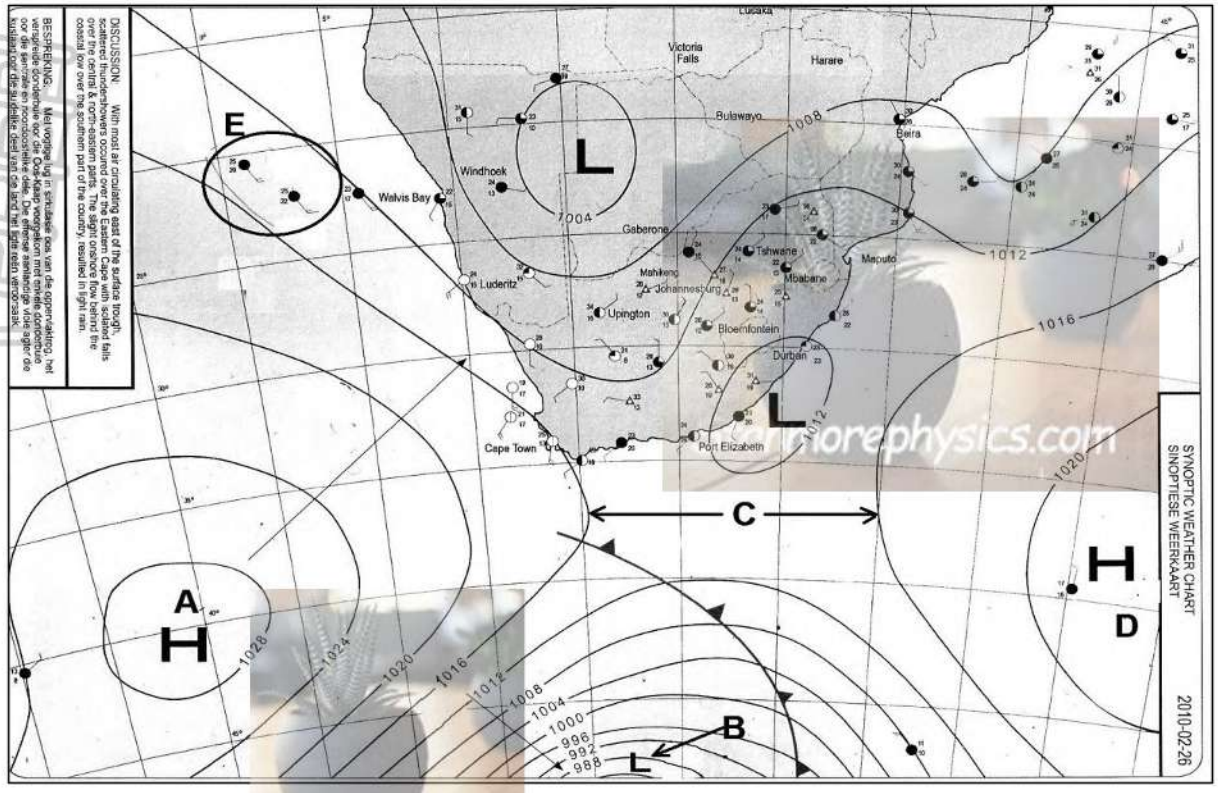
1.2.7 The area of warm subsiding air at 30° N and 30° S is known as the …

A. polar high-pressure belt.
B. equatorial low-pressure belt.
C. subtropical high-pressure belt.
D. subpolar high-pressure belt.

1.2.8. Thunderstorms occur at the …

A. Polar front.
B. Ferrel cell.
C. Polar cell.
D. Intertropical Convergent Zone. (8x1) (8)

1.3 Refer to the synoptic chart



1.3.1 The map represents summer conditions. State **TWO** pieces of evidence from the synoptic map to substantiate this statement. (2x1) (2)

1.3.2 Identify the pressure cell at **D**. (1x1) (1)

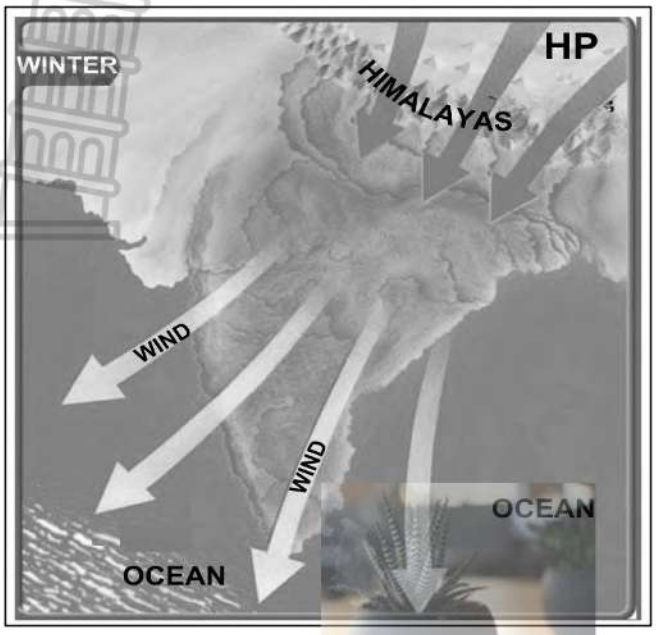
1.3.3 Give **ONE** reason for your answer to QUESTION 1.3.2. (1x2) (2)

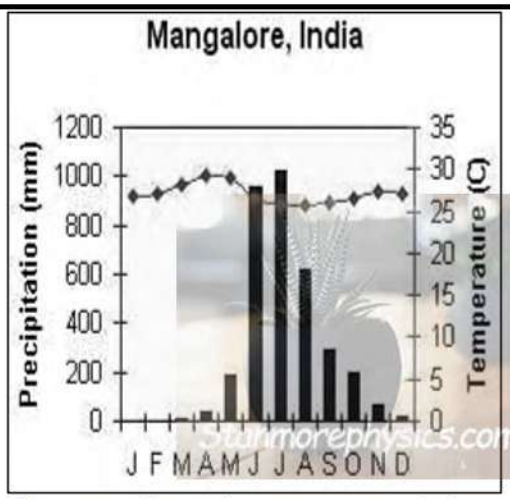
1.3.4. Identify the area of constant pressure at **C**. (1x2) (2)

1.3.5 Explain why unstable weather conditions can be expected over the interior of South Africa. (2x2) (4)

1.3.6. Explain how the warm and cold ocean currents on the eastern and western side of South Africa could control the temperature of South Africa in summer. (2x2) (4)

1.4 Refer to the infographic on Monsoon winds.





The southwest monsoon brings almost 70% of the rain India needs to water farms and replenish reservoirs and aquifers.

Without irrigation, almost half the farmland in the country depends on the rains that usually run from June to September.

1.4.1 What is a *Monsoon wind*? (1x2) (2)

1.4.2 According to the graph, during which season does India receive most of its rainfall? (1x1) (1)

1.4.3 Identify the ocean over which the winter monsoon blows. (1x2) (2)

1.4.4 Why does a high pressure form on the plateau in winter? (1x2) (2)

1.4.5 Explain why India receives significant rainfall from June to September. (2x2) (4)

1.4.6 Explain the positive physical impact of the significant amount of rainfall for the farmers of India. (2x2) (4)

.5 Refer to the case study on drought.

Severe Drought in Southern Africa

A prolonged dry spell in southern Africa in early 2024 scorched crops and threatened food security for millions of people. The drought has been fuelled in large part by the ongoing El Niño, which shifted rainfall patterns during the growing season.

The parched conditions came at a critical time when crops need ample water supply for growth and to produce grain. Insufficient rain and high temperatures resulted in crop failure in several countries.

Maize is the single most important cereal crop in southern Africa, accounting for a majority of the region's cereal production and 21 percent of the average person's diet. Its success or failure can affect the amount of food available. FEWS NET experts estimated in March 2024 that millions of people faced "crisis level" food insecurity in Zimbabwe, Malawi, central Mozambique, and Madagascar.

Falling crop harvests and water shortages led to Zambia, Malawi, and Zimbabwe declaring national disasters. Water for drinking and cooking has become scarcer as the region deals with an ongoing cholera outbreak.

[SOURCE: https://earthobservatory.nasa.gov/images/152711/severe-drought-in-southern-africa]

1.5.1 What is an *agricultural drought*? (1x2) (2)

1.5.2 Name **ONE** country in Southern Africa affected by the drought. (1x1) (1)

1.5.3 Quote from the extract **TWO** physical factors responsible for the 2024 drought in parts of Southern Africa. (2x1) (2)

1.5.4 Explain **ONE** negative economic impact of this drought on countries in Southern Africa. (1x2) (2)

1.5.5. In a paragraph of approximately EIGHT lines, explain the strategies countries in Africa can implement to reduce the impact of droughts. (4x2) (8)

TOTAL 60

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MEMORANDUM

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This question paper consists of 4 pages.

1.1 SHORT QUESTIONS

1.1.1 Westerlies (1)
1.1.2 Equator (1)
1.1.3 Tropical easterlies (1)
1.1.4 Polar front (1)
1.1.5 Southern (1)
1.1.6 Westerlies (1)
1.1.7 Planetary winds (1) (7x1) (7)

1.2
1.2.1 A (1)
1.2.2 B (1)
1.2.3 A (1)
1.2.4 C (1)
1.2.5 A (1)
1.2.6 B (1)
1.2.7 C (1)
1.2.8 D (1) (8x1) (8)

1.3 SYNOPTIC CHART

1.3.1 Low pressure cell in the interior (1)
High temperatures over the interior of South Africa (1)
Cold front more to the South of the land (1)
High pressure cells South of the land (1) (2x1) (2)
Date: 25/02/2010 (1)
[Any TWO]

1.3.2 South Indian High (1) (1x1) (1)

1.3.3 Atmospheric pressure increases towards the centre (2)
Highest atmospheric pressure found in the centre (2)
Atmospheric pressure 1020 hPa (above 1012hPa) (2)
[Any ONE] (1x2) (2)

1.3.4 Saddle (2) (1x2) (2)

1.3.5 Warm temperatures over the interior leads to the development of a low pressure cell (2)
Rising warm air cools condensate and form clouds and rain will occur (2)
Warm moist air from the Indian Ocean leads to convection and thunderstorms (2)
[Any TWO] (2x2) (4)

1.3.6 The warm Agulhas ocean (Mozambique) current raises the temperature of places on the East coast of southern Africa (2)
The cold Benguela ocean current cools the temperature of places on the West coast of southern Africa (2) (2x2) (4)

1.4 MONSOON

1.4.1. Monsoon winds are regional winds that mainly occurs in tropical regions (2)
Seasonal wind reversal bringing heavy rain in summer and dry conditions in winter (2)
[Concept] (1x2) (2)

1.4.2 Summer (1) (1x1) (1)

1.4.3 Indian ocean (2) (1x2) (2)

1.4.4 The air over the Siberian plateau become colder than the surrounding seas (2)
This cold air sinks and causes high pressure (2)
Cooling of land leads to dense, descending air forming high pressure (2)
[Any ONE] (1x2) (2)

1.4.5. Pressure is lower over the interior plateau than over the sea (2)
South westerly winds bring moist air over the land causing a drop in temperature bringing heavy downpours (2) (2x2) (4)

1.4.6. Fill dams, reservoirs for irrigation (2)
Increase level of underground water (2)
Fill up rivers for irrigation (2)
Provide water for crops (2)
Restore natural vegetation (2)
Provide moisture for soil (2)
[Any TWO] (2x2) (4)

1.5 DROUGHTS

1.5.1 Lack of sufficient moisture for crops during growing seasons (2).
A long period with little or no rain results in fewer crops (2)
[CONCEPT] (1x2) (2)

1.5.2 Zimbabwe (1)
Malawi (1)
Mozambique (1)
Madagascar (1)
[Any ONE] (1x1) (1)

1.5.3 Ongoing El Nino with shifting rainfall patterns (2)
Insufficient rain/prolonged dry spell (2)
High temperatures (2)
[Any TWO] (2x1) (2)

1.5.4 Less income from tourism (2)
The number of exports of a country is reduced as there is less exports (2)
Farm products become more expensive (2)
Crop failure leads to food shortages (2)
Industries associated with farm products suffer e.g. job loss (2)
[Any ONE] (1x2) (2)

1.5.5. Satellite images assist in determining the vegetation cover of a drought stricken area so that governments relief agencies can be alerted of possible food shortages (2)
Monitoring weather conditions to inform farmers what type of crops to plant (2)
Promote crops that need less water e.g. genetically modified (GM) (2)
Monitoring the possibility of drought enables people to be aware of possible food shortages and to make plans with regard to supply of food and famine relief programmes (2)
Constructing water storage facilities allow water to be stored (2).
Invest in efficient drip or sprinkler systems (2).
Ongoing research (2)
Water restrictions can be implemented (2)
Plant trees to improve rainfall and prevent soil erosion (2).
[Any FOUR] (4x2) (8)